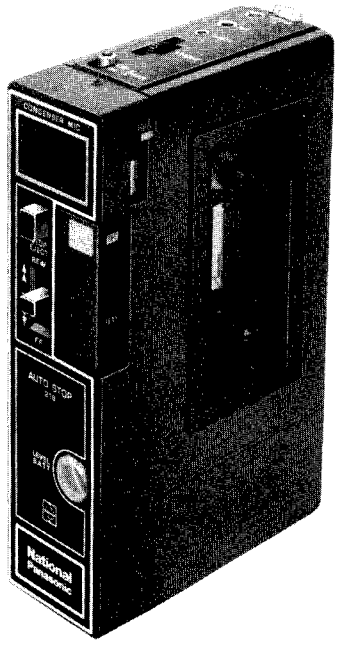
ORDER NO. ARD-7503021C

Service Manual

Portable Cassette Recorder

RQ-218S RQ-218S-E

Mini Cassette Recorder with Built-in Microphone



RS-218S MECHANISM SERIES

Specifications (Catalog specifications for sales)

Power requirement:	Battery; 6V, (four-UM-3, R6 size dry batteries) AC; with optional AC adaptor/charger RP-667, RP-667-E in Europe Car boat battery; with optional car/boat adaptor RP-916, RP-914-E in Europe Rechargeable battery; with optional rechargeable battery pack RP-093
Motor:	Electrical governor motor
Frequency response:	100~8,000Hz
Recording system:	AC bias
Operation:	Pushbutton one-touch operation with Auto-Stop mechanism
Tape speed:	4.8cm/s, (1-7/8ips)
Program time:	1 hour with C-60 cassette tape
Fast forward time:	Approx. 270 seconds with C-60 cassette tape
Rewind time:	Approx. 150 seconds with C-60 cassette tape
Track system:	2-track monaural recording and playback
Input:	MIC; sensitivity 0.28mV/applicable microphone impedance 200~600Ω (recommended microphone WM2202, WM2213N) DC IN; 6V
Output:	MONITOR; 8Ω REMOTE; for start and stop at hand
Speaker:	5cm, (2") PM dynamic speaker
Dimensions:	8.9cm (W)×14.2cm (H)×3.8cm (D) 3-1/2" (W)×5-5/8" (H)×1-1/2"(D)
Weigt:	550g, 1-1/4lbs.

Specifications are subject to change without notice for further improvement.

National Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

LOCATION OF PARTS

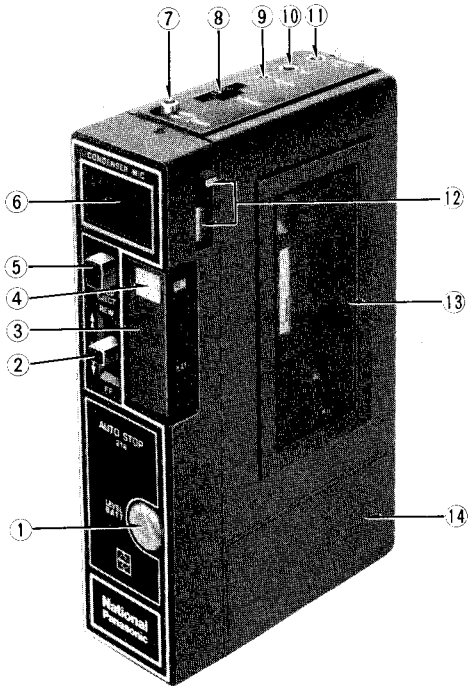


Fig. 1

① Level meter
② Fast forward/rewind button
③ Playback button
④ Record button
⑤ Stop/eject button
⑥ Built-in microphone
⑦ Pause button
⑧ Volume control
⑨ Remote control connection jack
⑩ Microphone jack
⑪ Monitor jack
⑫ Tape counter and reset button
⑬ Cassette compartment cover
⑭ Battery compartment

DISASSEMBLY INSTRUCTIONS

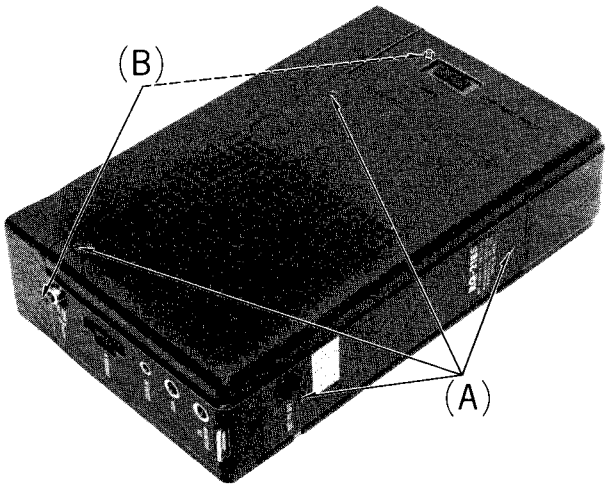


Fig. 2

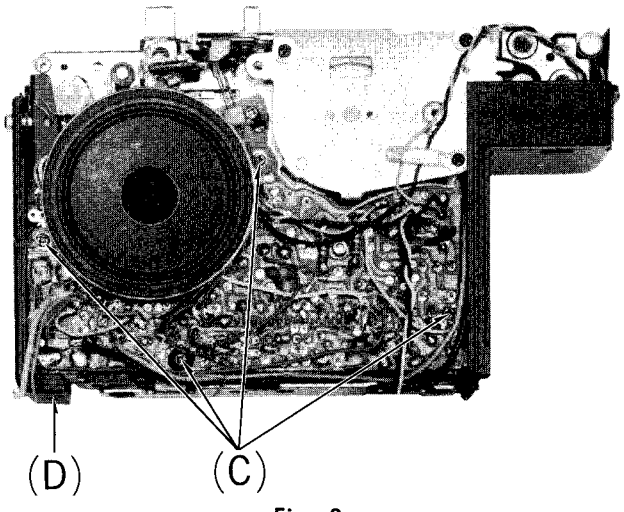


Fig. 3

HOW TO REMOVE CASSETTE LID, SIDE PANEL AND FRONT PANEL

1. Remove 4 side panel holding screws (A) and 2 front panel holding screws (B).
2. Then front panel, assembly of cassette lid and sid panel can be removed.

HOW TO REMOVE CHASSIS

1. Remove 4 chassis holding screws (C) and 1 screw (D).
2. Then chassis can be removed.

ADJUSTMENTS

MEASUREMENTS AND ADJUSTMENTS METHOD

A. PRESSURE ROLLER ADJUSTMENT (See fig. 4)

1. Set into playback mode.
2. Connect the spring gauge to pressure roller lever and pull it in the direction of the arrow as shown in fig. 4.
3. Measure the tension at the monent when the pressure roller moves away from the capstan.
   Standard pressure: **230±30 gr**
4. If the pressure is out of tolerance, bend the part (a) of the pressure roller spring in either direction shown by the arrow until the correct pressure is attained.

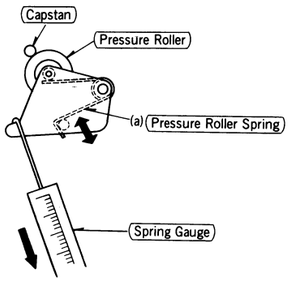


Fig. 4

B. HEAD AZIMUTH ADJUSTMENT (See fig. 5)

1. Play the test tape C-AA.
2. Adjust the screw for **maximum output** at monitor jack.

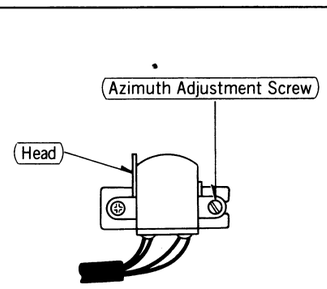


Fig. 5

C. TAPE SPEED ADJUSTMENT (See fig. 6)

1. Play the test tape C-WAT and supply output signal to frequency counter.
2. Read the value on frequency counter.
   Standard value: **3000 Hz±3%**
3. If the value is out of tolerance, adjust semi-fixed variable resistor (shown in electrical parts location) on motor governor circuit board and take aim at 3000 Hz±1% in order to secure accuracy.

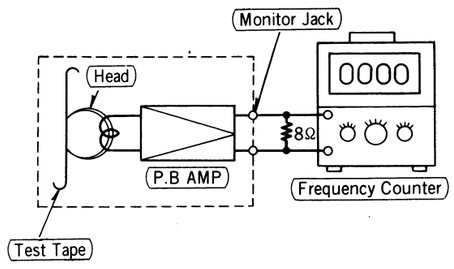


Fig. 6

D. RECORDING BIAS CURRENT ADJUSTMENT (See fig. 7)

1. Connect 10Ω resistor as shown in fig. 7.
2. Connect VTVM to both ends of 10Ω resistor.
3. Set into record mode and read voltage on VTVM.
   Standard voltage: **8±1 mV**
4. If the voltage is out of tolerance, change the short point A, B, C, of bias oscillation circuit.
   To increase, short ※ A.
   To declease, short ※ C.

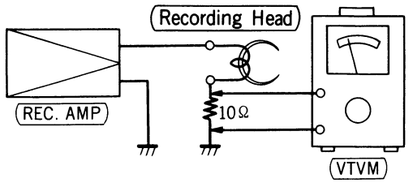


Fig. 7

E. LEVEL METER ADJUSTMENT (See fig. 8)

1. Supply DC 4.2 V to DC IN jack.
2. Set into playback mode and confirm the indicator position on level meter is as shown below.

Indicator position:

3. If the indicator get out of place, adjust VR2 until the level meter indicates above position.

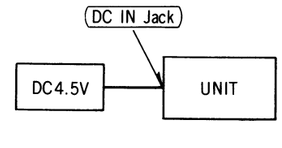
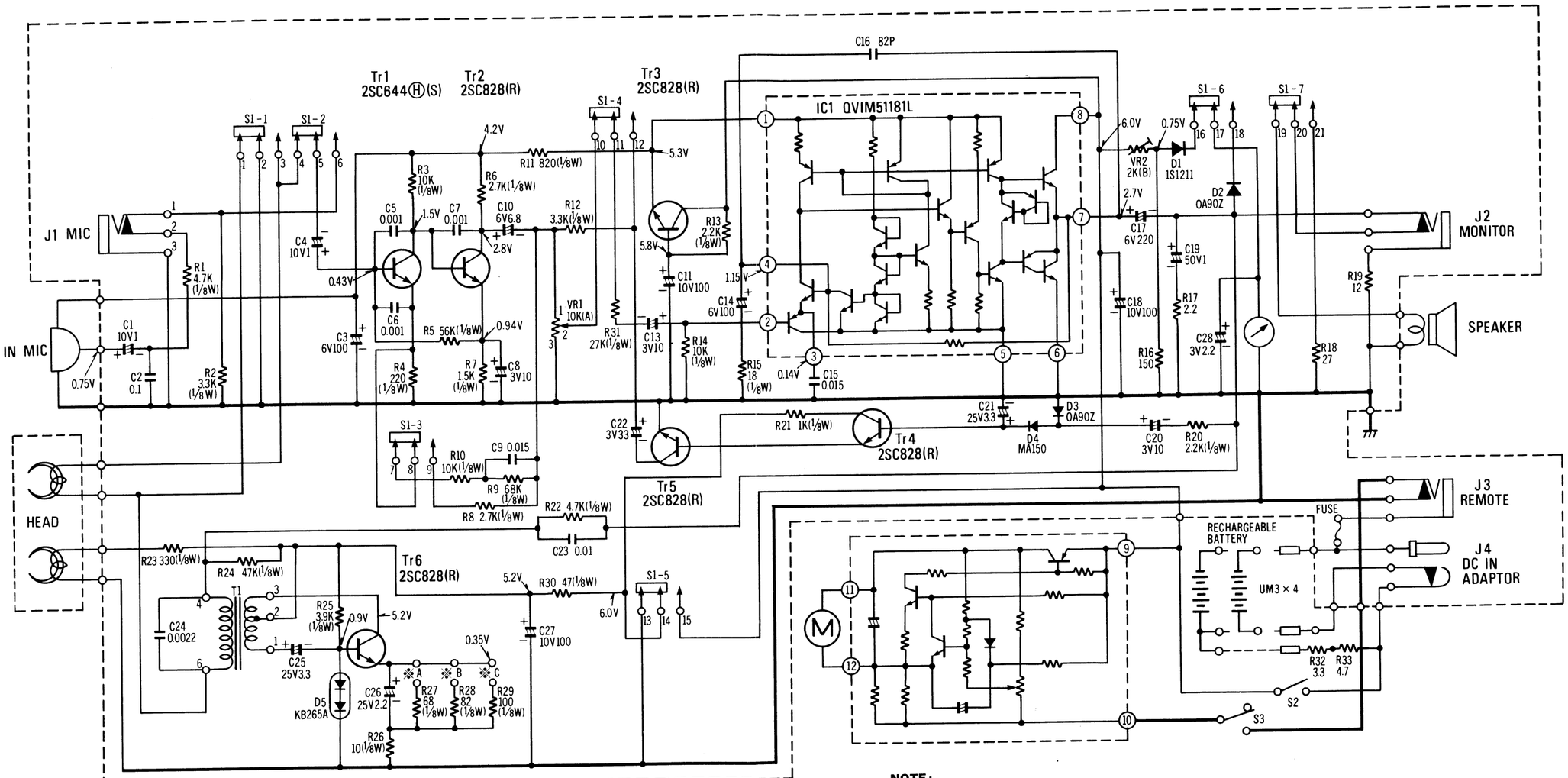


Fig. 8

F. OTHER SPECIFICATIONS FOR REFERENCE (NO ADJUSTABLE)

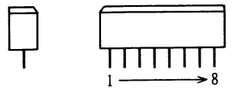
ITEM	VALUE	REMARKS
Wow & flutter (RMS)	less than 0.4%	Use 3 kHz test tape (C-WAT).
Takeup torque.	55±15 gr	Use cassette torque metter (RP-8063).
Standard recording input level.	1 kHz −72±5 dB	To obtain 70μA of recording current through the recording head. Stop the bias oscillation by unsoldering R30 shown in printed circuit board view on page 4.
Bias oscillation frequency.	44±5 kHz	———
Erase current.	DC 7.9±0.7 mA	———

SCHEMATIC DIAGRAM MODEL RQ-218S, RQ-218S-E

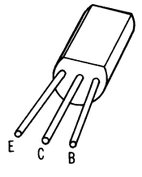


TERMINATIONS (BOTTOM VIEW)

IC 1



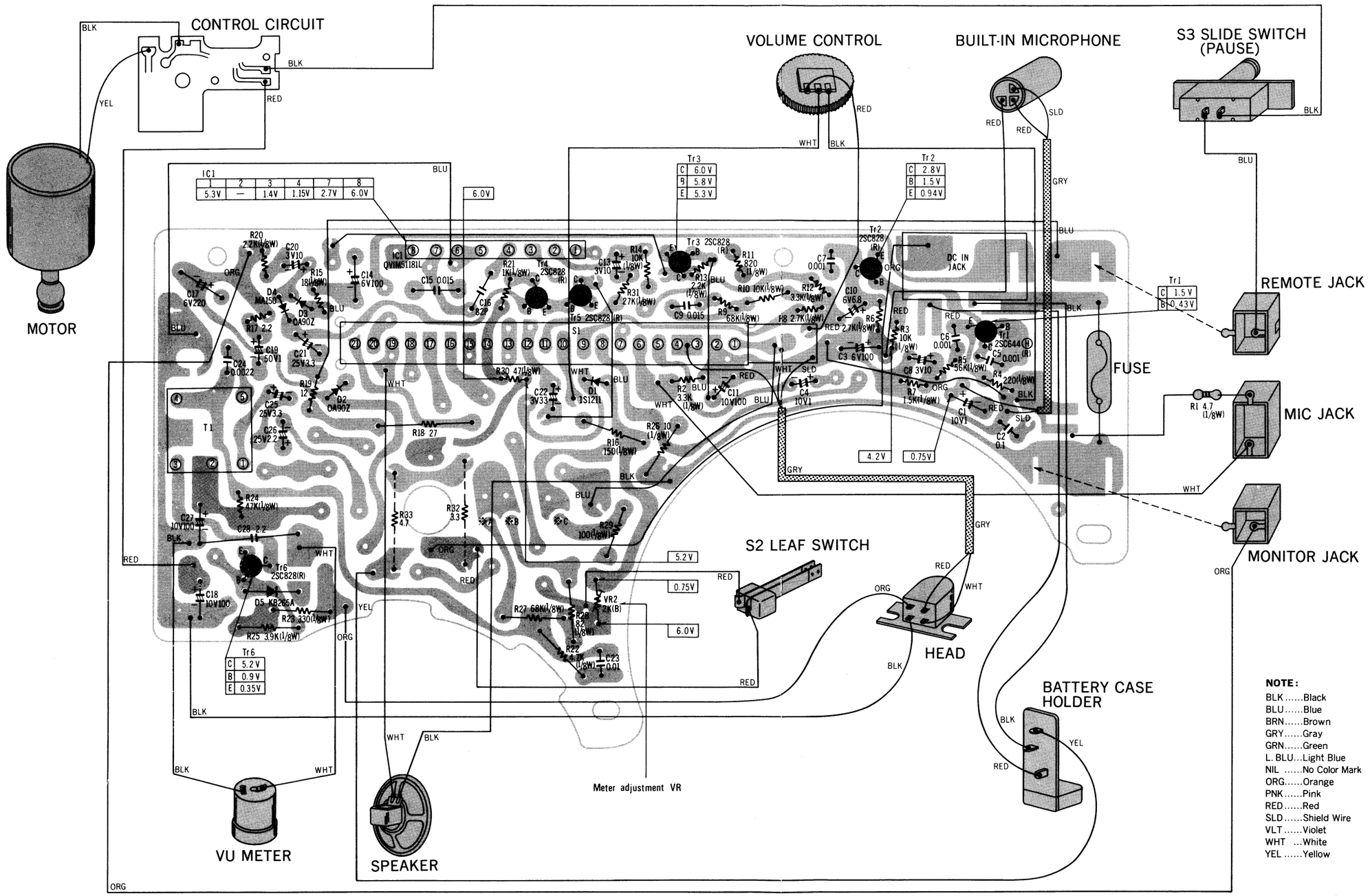
Tr1~Tr6



NOTE:

1. S1-1~S1-7.....Record/playback select switch (shown in playback position).
2. S2 .....Power ON/OFF switch (shown in OFF position).
3. S3 .....Pause switch (shown in OFF position).
4. VR1 .....Volume control.
5. VR2 .....Level meter adjustment VR.
6. Resistor values are in ohms (Ω), 1/4 watt unless specified otherwise. K=1,000Ω.
7. Capacitor values are in microfarads (μF) unless specified otherwise. P=Pico-farads.
8. Voltage values are under no signal conditions with volume at minimum position. Use VTVM for voltage measurements.
9. ※ A, B, C are short circuit for bias current adjustment.

WIRING CONNECTION DIAGRAM MODEL RQ-218S, RQ-218S-E



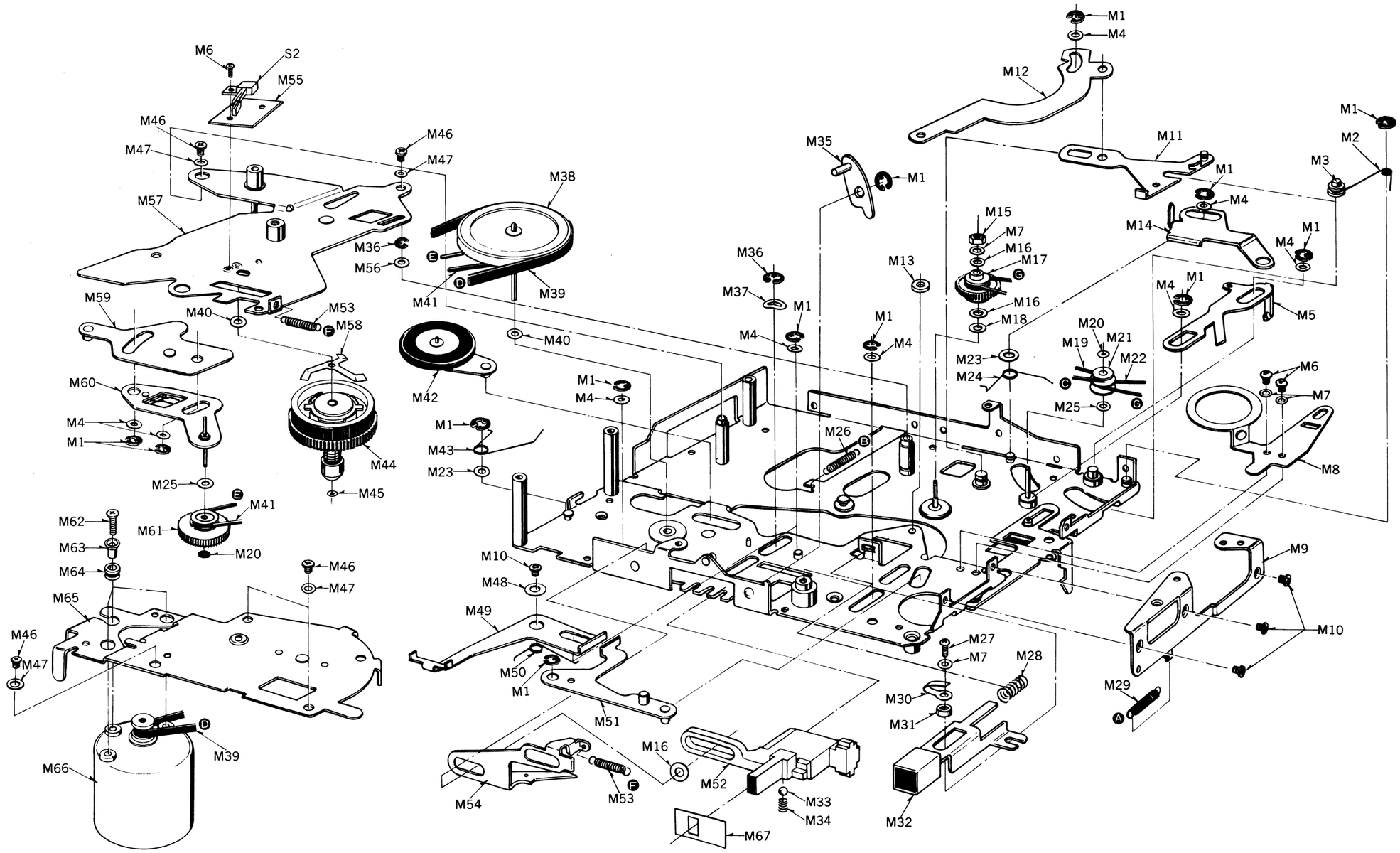
NOTE:

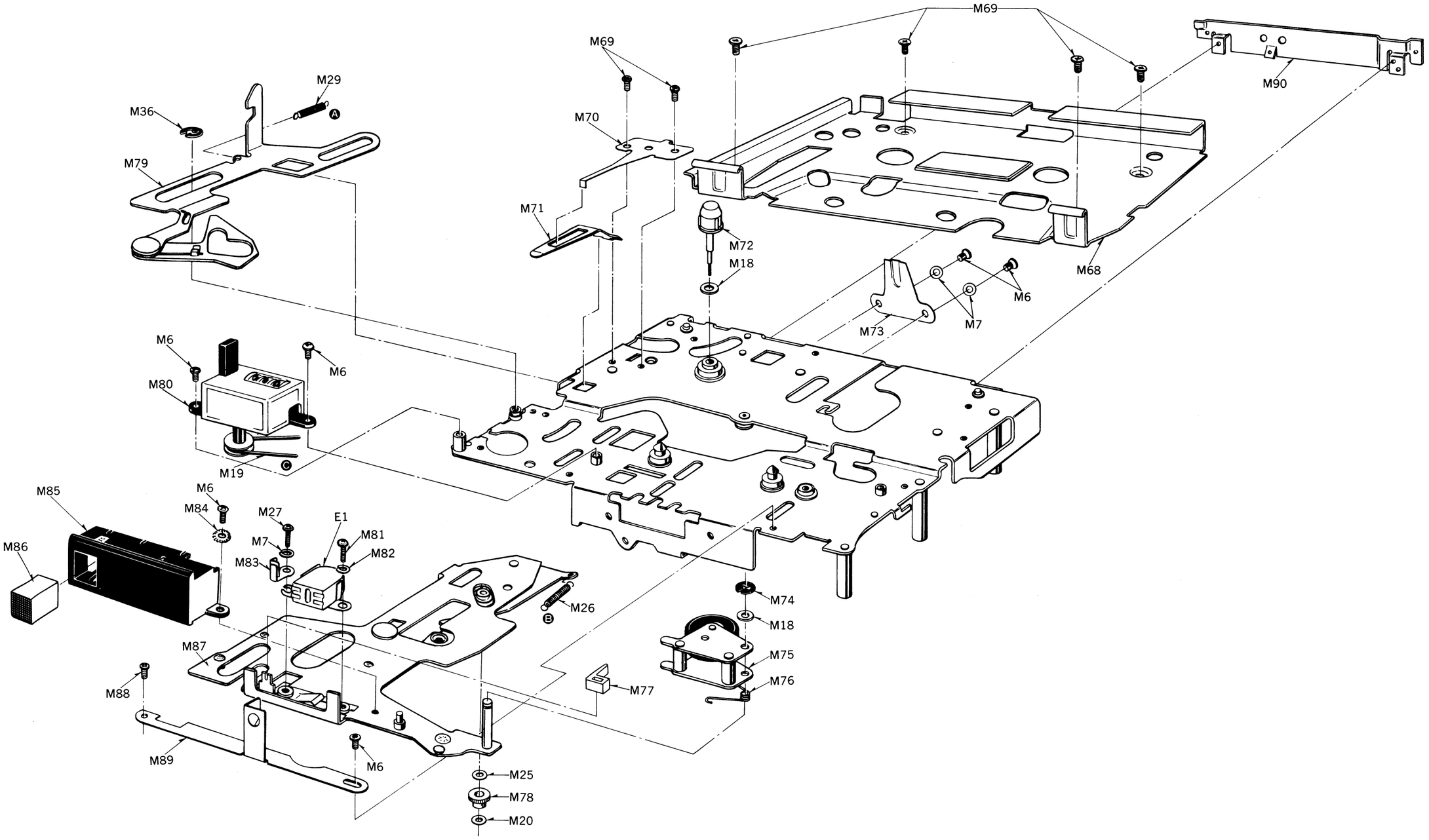
BLK.....Black
BLU.....Blue
BRN.....Brown
GRY.....Gray
GRN.....Green
L. BLU...Light Blue
NIL .....No Color Mark
ORG.....Orange
PNK.....Pink
RED.....Red
SLD.....Shield Wire
VLT.....Violet
WHT ...White
YEL .....Yellow

NOTE:

The circuit shown in red on the conductor is B circuit.
Values indicated in ▭ are DC voltage between the chassis and electrical parts.
※ A, B, C are short circuit for bias current adjustment.

EXPLODED VIEWS




M69
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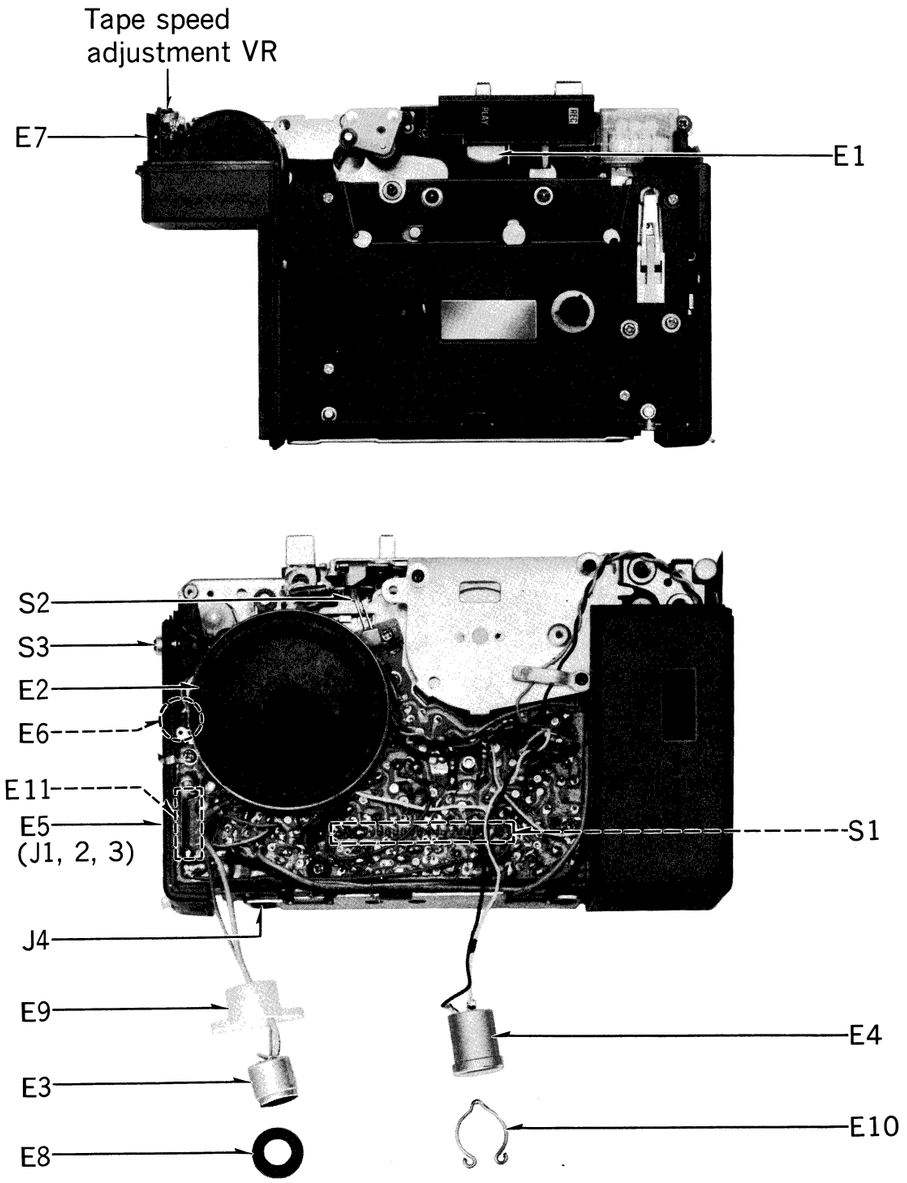
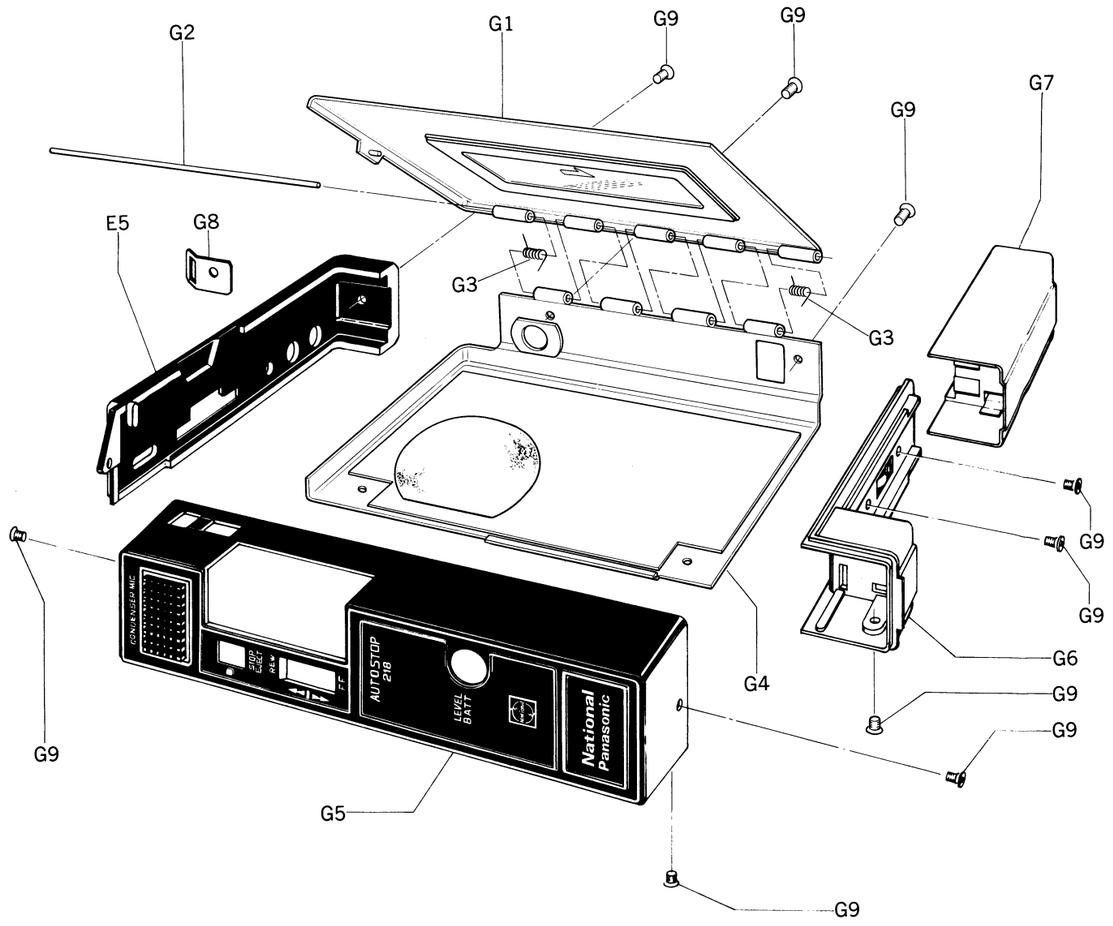
M80
M6
M19
M85
M6
M84
M27
E1
M81
M7
M82
M83
M86
M26
M74
M18
M87
M75
M76
M77
M88
M89
M6
M25
M78
M20

ELECTRICAL PARTS LOCATION



CABINET PARTS

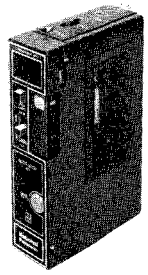


Printed in Japan.

REPLACEMENT PARTS LIST

MODEL RQ-218S, RQ-218S-E

National Panasonic



RQ-218S, RQ-218S-E

NOTE:

1. Be sure to make your orders of replacement parts according to this list.
2. "Ⓝ" in "Remarks" column indicates new parts.
3. "Ⓚ" indicates the serrated parts with 18 notches.

NOTA:

1. Habrá que asegurarse que los pedidos de piezas de repuesto se hagan según esta lista.
2. "Ⓝ" marcado en la columna "Remarks", quiere decir que las piezas son nuevas.
3. "Ⓚ" indica las partes dentadas con 18 ranuras.

NOTE:

1. Bien s'assutet de se conformer à la liste suivante pour les commandes de pièces de rechange.
2. "Ⓝ", dans la colonne "Remarks", indique les pièces nouvelles.
3. "Ⓚ" indique les pièces cannelèes à 18 crans.

HINWEIS:

1. Bestellen Sie Ihre Ersatzteile genau nach dieser Liste.
2. "Ⓝ" in der "Remarks" Spalte bedeutet "neue Teile".
3. "Ⓚ" bezeichnet die gezähnten Teile mit 18 Zähnen.

按:

1. 關於代用零件之訂購，務請依照此表而行之爲荷。
2. 「備考」(Remarks) 一欄中之 "Ⓝ" 形符號標記表示該零件爲新出品。
3. "Ⓚ" 形符號標記表示備有18個凹槽的鋸齒狀零件。

Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
	MECHANICAL PARTS					
M1	Stop Ring	XUC25FT	18			RQ-309S
M2	Spring, Play-Record Select	QBN1402A	1			Ⓝ
M3	Shaft, Play-Record Select	QMN1916	1			Ⓝ
M4	Washer	QBW2016	13			RS-104S
M5	Erase Prevention Lever	QXR0115	1			Ⓝ
M6	Screw	XSN2+3	8			RQ-309S
M7	Washer	XWA2FX	7			Ⓝ
M8	Eject Spring Holder	QXA0423	1			Ⓝ
M9	Volume Angle	QMA2400	1			Ⓝ
M10	Screw	QHQ1148	4			Ⓝ
M11	Play-Record Select Lever	QML2732	1			Ⓝ
M12	Record Lever	QXR0119	1			Ⓝ
M13	Rubber	QBG1477	1			Ⓝ
M14	Play-Record Select Rod	QMR1419A	1			Ⓝ
M15	Nut	XNG2EFX	1			Ⓝ
M16	Washer	QBW0026	2			Ⓝ
M17	Gear, Supply Reel	QDG1066	1			Ⓝ
M18	Washer	QBW2014	3			RS-104S
M19	Belt (B), Tape Counter	QDB0206	1			Ⓝ
M20	Washer	QBW2030	3			RQ-454S
M21	Pulley	QDP1610	1			Ⓝ
M22	Belt (A), Tape Counter	QDB0205	1			Ⓝ
M23	Washer	QBK7121	2			RS-610US
M24	Spring, Erase Prevention Lever	QBN1398	1			Ⓝ
M25	Washer	QBW2010	3			RQ-454S
M26	Spring, Playback Lever	QBT1768DA	1			Ⓝ
M27	Screw	XSN2+4	2			RQ-309S
M28	Spring, Stop Lever	QBC1244	1			Ⓝ
M29	Spring, Eject Rod	QBT1770DA	1			Ⓝ
M30	Cord Stopper (B)	QTDA0001	1			RQ-215S
M31	Guide Pole (B)	QMN1914	1			Ⓝ
M32	Stop Lever Assembly	QXR0120	1			Ⓝ
M33	Steel Ball 3ϕ	QDK1006	1			RS-451S

Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
M34	Spring	QBC1211	1			Ⓝ
M35	Motor Operating Lever	QXL0914	1			Ⓝ
M36	Stop Ring	XUC3FT	2			RQ-435S
M37	Spring Washer	QBP1519	1			RQ-454S
M38	Flywheel	QXF0099	1			Ⓝ
M39	Belt, Flywheel	QDB0203	1			Ⓝ
M40	Washer	QBW2012	2			RQ-454S
M41	Belt, Fast Forward	QDB0204	1			Ⓝ
M42	Idler	QXR0117	1			Ⓝ
M43	Spring, Idler Pressure	QBN1401A	1			Ⓝ
M44	Takeup Reel	QXD0035A	1			Ⓝ
M45	Washer	QBW2008	1			RS-104S
M46	Screw	QHQ1205	5			Ⓝ
M47	Washer	XWG2FX	4			Ⓝ
M48	Auto Stop Lever Stopper	QMC0016	1			Ⓝ
M49	Auto Stop Lever	QML2731B	1			Ⓝ
M50	Spring, Auto Stop Lever	QBN1397B	1			Ⓝ
M51	Stop Lever	QXL0917	1			Ⓝ
M52	Fast Forward Rod	QXR1055	1			Ⓝ
M53	Spring, Motor Operating Rod	QBT1769	1			Ⓝ
M54	Motor Operating Rod	QMR1417	1			Ⓝ
M55	Plate	QBK1212A	1			Ⓝ
M56	Washer	QBW2019	1			RQ-454S
M57	Bottom Plate	QXK1566A	1			Ⓝ
M58	Spring, Back Tension	QBC1272	1			Ⓝ
M59	Fast Forward Arm	QXL0915	1			Ⓝ
M60	Fast Forward Gear Arm	QXL0916	1			Ⓝ
M61	Fast Forward Gear	QDG1065	1			Ⓝ
M62	Screw	QHQ1149	3			Ⓝ
M63	Washer	QMZA0002	1			RQ-215S
M64	Rubber	QBGA0001	1			RQ-222AS
M65	Flywheel Plate	QXK1567	1			Ⓝ
M66	Motor	MFE5L6AXM	1			Ⓝ
M67	Fast Forward Indicating Plate	QMF1588A	1			Ⓝ
M68	Ornament Plate (A)	QXR0121	1			Ⓝ

Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
M69	Screw	QHQ1185	6			Ⓝ
M70	Spring, Eject Support	QBP1602	1			Ⓝ
M71	Spring, Eject	QBP1494B	1			Ⓝ
M72	Supply Reel	QXD0033	1			Ⓝ
M73	Spring, Cassette Holding	QBP1496C	1			Ⓝ
M74	Stop Ring	XUC15FK	1			RQ-454S
M75	Pressure Roller Arm	QXL0923B	1			Ⓝ
M76	Spring, Pressure Roller	QBN1396A	1			Ⓝ
M77	Detecting Piece	QBJ2232	1			Ⓝ
M78	Gear	QDG1067	1			Ⓝ
M79	Eject Rod	QXR0116	1			Ⓝ
M80	Tape Counter	QDC0058	1			Ⓝ
M81	Screw	XSN2−4	1			RQ-445S
M82	Washer	QWE2FX	1			Ⓝ
M83	Wire Clumper	QMA2428A	1			Ⓝ
M84	Washer	XWC2BFX	1			Ⓝ
M85	Play Button	QGO1094C	1			Ⓝ
M86	Record Button	QGO1095C	1			Ⓝ
M87	Playback Rod	QXR0133	1			Ⓝ
M88	Screw	QHQ1147	4			Ⓝ
M89	Ornament Plate (B)	QGK2501	1			Ⓝ
M90	Support Rod	QMF1712	1			Ⓝ
	RESISTORS					
R1, 22	Solid Resistor 4.7KΩ 1/8W	ERC18GJ472	2			
R2, 12	" 3.3KΩ 1/8W	ERC18GJ332	2			
R3, 10, 14	" 10KΩ 1/8W	ERC18GJ103	3			
R4	" 220Ω 1/8W	ERC18GJ221	1			
R5	" 56KΩ 1/8W	ERC18GJ563	1			
R6, 8	" 2.7KΩ 1/8W	ERC18GJ272	2			
R7	" 1.5KΩ 1/8W	ERC18GJ152	1			
R9	" 68KΩ 1/8W	ERC18GJ683	1			
R11	" 820Ω 1/8W	ERC18GJ821	1			
R13, 20	" 2.2KΩ 1/8W	ERC18GJ222	2			
R15	" 18Ω 1/8W	ERC18GJ180	1			

Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
R16	Solid Resistor 150Ω 1/8 W	ERC18GJ151	1			
R17	" 2.2Ω 1/4 W	ERC14GJ2R2	1			
R18	" 27Ω 1/4 W	ERC14GJ270	1			
R19	" 12Ω 1/4 W	ERC14GJ120	1			
R21	" 1KΩ 1/8 W	ERC18GJ102	1			
R23	" 330Ω 1/8 W	ERC18GJ331	1			
R24	" 47KΩ 1/8 W	ERC18GJ473	1			
R25	" 3.9KΩ 1/8 W	ERC18GJ392	1			
R26	" 10Ω 1/8 W	ERC18GJ100	1			
R27	" 68Ω 1/8 W	ERC18GJ680	1			
R28	" 82Ω 1/8 W	ERC18GJ820	1			
R29	" 100Ω 1/8 W	ERC18GJ101	1			
R30	" 47Ω 1/8 W	ERC18GJ470	1			
R31	" 27KΩ 1/8 W	ERC18GJ273	1			
R32	" 3.3Ω 1/4 W	ERC14GJ3R3	1			
R33	" 4.7Ω 1/4 W	ERC14GJ4R7	1			
	VARIABLE RESISTORS					
VR1	Variable Resistor 10KΩ (A)	EVLA0AT10A14	1			Ⓝ
VR2	Semi-fixed Variable Resistor 2KΩ (B)	EVMF4GA00B23	1			Ⓝ
	CAPACITORS					
C1, 4	Electrolytic Capacitor 1μF	ECSZ10EF1Q	2			
C2	Ceramic Capacitor 0.1μF	ECKD12V104MF	1			
C3, 14	Electrolytic Capacitor 100μF	ECEA6V100LU	2			
C5, 6, 7	Ceramic Capacitor 0.001μF	ECKD1H102PF	3			
C8, 13, 20	Electrolytic Capacitor 10μF	ECSZ3EF10Q	3			
C9, 15	Mylar Capacitor 0.015μF	ECQM05153MZ	2			
C10	Electrolytic Capacitor 6.8μF	ECSZ6EF6R8Q	1			
C11, 18, 27	" 100μF	ECEA10V100LU	3			
C16	Ceramic Capacitor 82 pF	ECCD1H820JC	1			
C17	Electrolytic Capacitor 220μF	ECEA6V220LU	1			
C19	" 1μF	ECEA50V1LU	1			
C21, 25	" 3.3μF	ECEA25V3R3LU	2			
C22	" 33μF	ECSZ3EF33Q	1			

Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
C23	Mylar Capacitor 0.01μF	ECQM05103KZ	1			
C24	" 0.0022μF	ECQM05222KZ	1			
C26	Electrolytic Capacitor 2.2μF	ECSZ25EF2R2Q	1			
C28	" 2.2μF	ECSZ3EF2R2Q	1			
	TRANSISTORS					
Tr1	Transistor	2SC644Ⓗ	1			RS-715US
Tr2, 3, 4, 5, 6	"	2SC828	5			RQ-317S
	INGRATED PART					
IC1	Integrated Circuit	QVIM51181L	1			Ⓝ
	DIODES & RECTIFIER					
D1	Diode	1S1211	1			RQ-445S
D2, 3	"	OA90Z	2			COMMON
D4	"	MA150	1			RQ-454S
D5	Silicon Varistor	KB265A	1			RQ-445S
	TRANSFORMER					
T1	Oscillator Transformer	QLB0309	1			RQ-317S
	SWITCHES					
S1	Slide Switch (Record/Playback)	ESD1248	1			Ⓝ
S2	Leaf Switch	QSB0194	1			Ⓝ
S3	Slide Switch (Pause)	QSS1202H	1			Ⓝ
	JACKS					
J1, 2, 3	Included in Jack Board	Refer to E5	(1)			
J4	DC IN Jack	QJA0143	1			Ⓝ
	ELECTRICAL PARTS					
E1	Head	WY044AZ	1			Ⓝ
E2	Speaker	EAS5P03S	1			Ⓝ
E3	Built-in Microphone	WM058P	1			Ⓝ
E4	Level Meter	QSL1048	1			Ⓝ

Ref. No.	Description	Part No.	Pcs/ Set	Price (Per Pce.)		Remarks
E5	Jack Board	QJA0441	1			(N)
E6	Volume Knob Assembly	QYT0358	1			(N)
E7	Mylar Sheet	QTW1122	1			(N)
E8	Rubber, Microphone Cover	QBG1475	1			(N)
E9	Microphone Cover	QKJ0059	1			(N)
E10	Spring, Level Meter Holding	QBN1394	1			(N)
E11	Fuse	QLG8G018	1			(N)
	CABINET PARTS					
G1	Cassette Lid	QYK0078	1			(N)
G2	Cassette Lid Shaft	QMN1891	1			(N)
G3	Spring, Cassette Lid	QBN1393	2			(N)
G4	Side Panel	QYK0079	1			(N)
G5	Front Panel	QYK0076	1			(N)
G6	Battery Case Holder	QYD1010	1			(N)
G7	Battery Case	QYK0072	1			(N)
G8	Hook	QMF1713	1			(N)
G9	Screw	QHQ1151	9			(N)
	ACCESSORIES					
A1	Cassette Tape	QFTITCCNAYZ	1			
A2	Radio Cord-M	RP10A	1			RQ-218SN only
(A2)	Radio Cord-E	RP052A	1			RQ-218SE only
A3	Erase Plug	QJP0959A	1			RQ-454S
A4	Carring Case	QFK0096	1			(N)
A5	Wrist Strap	QKH1096	1			(N)
A6	Earphone	EAE2SB1	1			COMMON
A7	Instruction Book	QQT0846	1			(N) RQ-218SN only
(A7)	"	QQT0877	1			(N) RQ-218SE only
	PACKINGS					
P1	Inside Carton	QPN3212	1			(N)
P2	Dust Cover	XZB16X22A05	1			(N)

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